Special Public Notice

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ENDANGERED SPECIES ACT GUIDANCE FOR NEW AND REPLACEMENT PIERS AND BULKHEADS IN LAKE WASHINGTON, LAKE SAMMAMISH, AND THE SHIP CANAL, INCLUDING LAKE UNION

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Summary

In order to protect threatened species in the Lake Washington freshwater system, the Corps of Engineers (Corps), the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS) have developed Endangered Species Act (ESA) Guidance for applicants proposing new and replacement piers, bulkheads, and other activities. This Guidance is provided to assist applicants, expedite project review, and streamline the permit process while preserving protected species.

This Guidance will help applicants avoid impacts to protected species by incorporating impact reduction and habitat enhancement measures into their project design and construction. These measures may include:

- Minimization of pier size and shading impacts
- Enhancement of the nearshore area
- Minimization of impacts to water quality

Table 1 on page 6 provides a detailed list of impact reduction measures and enhancement recommendations.

Introduction

The purpose of this public notice is to provide permit applicants and other interested parties with Endangered Species Act Guidance (Guidance) developed for new and replacement piers and bulkheads and other activities in the Lake Washington freshwater system. The Guidance was developed jointly by the Seattle District, Corps of Engineers (Corps), the U.S. Fish and Wildlife Service (FWS), and the National Marine Fisheries Service (NMFS). The Guidance provides measures that can be incorporated into project designs to avoid impacts to protected species and Essential Fish Habitat (EFH), as well as, enhance the aquatic environment and streamline the permit process.

Since 1999, chinook salmon (under NMFS jurisdiction) and bull trout (under FWS jurisdiction) have been listed as threatened for Puget Sound under the Endangered Species Act (ESA) of 1973. The bald eagle was federally listed as threatened in 1978. The ESA requires all Federal agencies to use their authorities to conserve or recover threatened or endangered species. It also requires all Federal agencies "to ensure that any action authorized, funded, or carried out by such agency not jeopardize the continued existence of the species or result in the destruction or adverse modification of its habitat." These two requirements of Federal agencies have necessitated substantive changes in the Corps' permit review process for all proposed projects that could affect protected species. A major change is the requirement for the Corps to consult with the NMFS and the FWS (jointly called the Services) on proposals for new and replacement piers, bulkheads, and other types of construction affecting these protected aquatic species in Lake Washington and other waters. Through this consultation process, the Corps and the Services work together to minimize harm and ensure that permitted actions do not jeopardize the species.

Federal agencies are also obligated, under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to consult with NMFS regarding actions authorized, funded, or undertaken by that Federal agency which may adversely affect Essential Fish Habitat (EFH). The MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The Lake Washington system is included in EFH for Pacific Salmon. The consultation process and the guidance below applies to both ESA and MSA requirements.

Background

Lake Washington is approximately twenty miles long and is bordered by the cities of Seattle, Renton, Bellevue, Kirkland and Kenmore. Historically, Lake Washington had a vegetated shoreline of wetlands, trees, brush, and other mixed vegetation that created a diverse nearshore habitat. The shoreline's natural structural complexity was beneficial for fish and other aquatic species. Larger conifers that grew in the riparian area provided shade and contributed plant material (branches, needles) and terrestrial insects to the aquatic food chain. The United States Fish Commission Bulletin published in 1898 describes the lake as follows; "Only in a few places along the shore of the entire lake is the bottom sufficiently free from snags, fallen trees, and other material to permit the successful hauling of nets."

A dramatic change occurred in 1916 when the Hiram Chittenden Locks and parts of the Ship Canal were constructed, connecting Lake Washington to Puget Sound. The lake outlet changed from the Black River (that discharged into the Duwamish River) to the Ship Canal locks. Lake water levels were lowered nine feet with a subsequent loss of over ten miles of shoreline and approximately 1,000 acres of wetlands. During the past century, extensive shoreline changes have further reduced shoreline length and most native riparian vegetation has been replaced by residential and commercial development. Today, approximately eighty percent of the existing shoreline is lined with bulkheads that reduce the remaining shallow water habitat and change shallow water substrates. Over 2,700 piers extend into the lake, introducing a different pattern of shade from that produced by shoreline vegetation and changing the underwater habitat from complex (horizontal fallen trees with branches) to simple (vertical smooth pilings). The result of these actions is to remove the complex and diverse plant community and associated food web from the shallow water habitat.

Today, the lake level is artificially regulated within a two-foot range. The high water/low water regime is reversed from the natural state. High water occurs during the summer for extensive operation of the locks. Low water occurs during the winter to allow for summer water storage and to protect property from winter wave action.

Lake Union is located entirely within the City of Seattle. With extensive bulkheads and piers, the shoreline is almost entirely commercialized with a significant amount of impervious surface and a riparian zone that is essentially devoid of vegetative cover. Numerous marinas and piers extend out from the shoreline and significantly shade the shallowest portions of the lake. Shallow water less than three feet is very limited except in the area around Gas Works Park. The ship canal connecting Lake Union to Lake Washington and Puget Sound serves as a navigation channel to provide passage for boats.

Lake Sammamish is located in a suburban landscape that has become significantly more developed during the last 20 years. The riparian area and shoreline of Lake Sammamish has been substantially altered by residential development. Like Lake Washington, its shoreline is armored with many bulkheads and piers. Near the Lake Sammamish outlet into the Sammamish River, a concrete weir exists. The purpose of this weir is to maintain lake levels and provide fish passage during low flow conditions.

Largemouth bass are typically found in shallow bays with muddy substrates. Smallmouth bass prefer rocky substrates and are attracted to structure. Bass are particularly concentrated in Lake Union and the Ship Canal. In the Ship Canal and the three lakes, piling can provide structure that attract these predators. In Lake Union and Portage Bay, a high level of bass predation on chinook has been reported by the FWS and the Muckleshoot Indian Tribe. Other predators of juvenile salmon throughout the Lake Washington system include northern pikeminnow, prickly sculpin, and cutthroat and rainbow trout.

Status of Chinook in the Lake Washington System

All naturally-spawning Puget Sound chinook salmon are protected under the ESA and their numbers in the Lake Washington system are diminishing. Chinook populations from the Cedar River, North Lake Washington tributaries and Issaquah Creek all rear in or migrate through the Lake Washington system. The Cedar River population, considered the most important for

recovery purposes, is entirely naturally-spawning. All of the North Lake Washington tributary populations also spawn in the wild. Some portions of the Issaquah Creek population also spawn naturally, although many are captured at the Issaquah Hatchery.

The Cedar River population is of particular concern because of the severe decline in the numbers of returning adults over the past decade. The number of returning adults dropped from approximately 2000 in the mid-1980s to approximately 120 during the fall of 2000. The effects on the chinook populations due to the landslide into the Cedar River that occurred during the February 2001 earthquake are unknown but a cause for concern.

Juvenile chinook are often observed in the shallow waters of Lake Washington where trees and bushes overhang the water and where substrate is small. From January through March, Lake Washington functions as nursery habitat for chinook from the Cedar River on their way to Puget Sound. Juvenile chinook from the Cedar River, the Lake Washington tributaries and Issaquah Creek migrate into the lake from May through mid-summer, and use the lake as a migration corridor to Puget Sound. A very small number of chinook remain in Lake Washington year-round.

Adult chinook begin returning to freshwater in June and travel throughout the lakes to converge around freshwater streams and rivers before migrating upstream. Adult migration out of the lakes into rivers and streams is usually completed by mid-November. Some limited spawning has been recorded along the shores of Lake Washington in cold water areas where upwelling or downwelling occurs.

Status of Bull Trout in the Lake Washington System

As with many waterways in Washington, the abundance and distribution of bull trout in Lake Washington is not well known. However, bull trout have been observed throughout the Lake Washington watershed, including the Cedar River (in the delta, lower Cedar, and Landsberg reach), upper Issaquah Creek, Lake Washington, and Shilshole Bay (immediately west of the Chittenden Locks). All bull trout are protected under the ESA.

The following description of bull trout use in the Lake Washington watershed was obtained from "A Summary of the Effects of Bulkheads, Piers, and Other Artificial Structures and Shorezone Development on ESA-listed Salmonids in Lakes", by the City of Bellevue, dated 13 July 2000 (http://www.ci.bellevue.wa.us/utilities/docks.htm).

Bull trout that occupy Lake Washington or Lake Sammamish likely exhibit similar distribution and behavior to that of bull trout observed in other lakes. Juveniles would migrate to the lake after rearing one to three years in headwater streams. Adult spawners would begin upstream migrations from April through July. Adults may spawn annually as observed in other North Puget Sound populations. Immature fish residing in the lake would be likely to migrate upstream with the spawners. Those immature fish and any non-spawning adults remaining in the lake during the summer would tend to avoid temperatures above 59^{o}F. High temperature avoidance would confine bull trout in deeper, cooler waters (deeper than about 50 feet) from mid-June through mid-October, with some annual variation due to climatic differences. While in deeper,

cooler waters in the summer and fall, bull trout may feed on sockeye salmon, longfin smelt, and prickly sculpin. At other times of the year, bull trout may venture into the nearshore area for their prey.

Chester Morse Reservoir is believed to be the only likely viable bull trout subpopulation in the Lake Washington watershed and is located above a natural fish passage barrier. It is possible that some fish emigrate from the Chester Morse Reservoir to marine areas or reside in Lake Washington. Cedar River tributaries below Chester Morse Reservoir probably do not meet the temperature requirements for spawning and successful egg incubation. Only a few streams within the Issaquah Creek system extend to higher elevations (near the snow line) that typically support bull trout spawning habitat, limiting the potential for bull trout reproduction in the Sammamish River-Issaquah Creek system. However, char (such as bull trout or Dolly Varden) are known to exhibit "pioneering" behavior, spawning in areas other than their native stream. Bull trout originating from other watersheds may periodically move into the Lake Washington system because anadromous bull trout and Dolly Varden have been observed to overwinter and forage in freshwater systems different from their natal watershed.

Habitat Conditions for Chinook and Bull Trout

Riparian and nearshore landscapes that provide suitable habitat conditions for chinook, bull trout, and other aquatic species are those where natural habitat forming processes and functions are uninterrupted. Chinook and other juvenile fish migrate along the shoreline. Shallow water can provide protection from larger predatory fish. Bull trout may forage in shallow water during certain times of the year.

Native trees and shrubs growing near the water provide leaf litter, terrestrial insect food sources and eventually woody debris along the shore and in the water. Native emergent vegetation in shallow water increases the complexity and diversity of habitat in the nearshore zone. The shoreline vegetation helps maintain and develop natural processes that establish a shoreline supporting the food web and provides crucial in-water habitat.

Extensive riparian clearing and shoreline reductions and modifications have simplified the nearshore habitat and reduced structural diversity, forcing juvenile salmonids to migrate in areas with little or no cover. Fixed piers shade the nearshore and their pilings introduce a structural feature into the water that may influence predator location and the food web. For instance, bass, a non-native predator, may congregate around piers and consume substantial numbers of juvenile chinook during the spring and early summer. The aggregate effect of many piers and their associated uses (boat impacts) on juvenile salmonids is a major concern.

Bulkheads alter the natural gradient of shorelines. Erosion at the base of the bulkheads often occurs in areas with wave action, causing weakening and sometimes failure of the structure. When bulkheads are built to protect existing shorelines or to create additional land, shallow water habitat for fish and other species is lost. Bulkheads isolate and starve the aquatic portions of the lake ecosystem of the natural elements that contribute to the food web (leaf litter, insects falling into the water from overhanging vegetation) and the structural elements of complex diverse habitat (gravel, rock, woody debris). In aggregate, the many bulkheads built around the lakes limit the natural processes and structure that create properly functioning habitat conditions needed for juvenile salmonid survival.

In addition to extensive shoreline development, other factors that can compromise the survival of juvenile and adult salmon and bull trout include poor water quality and high water temperatures. All juvenile and adult salmon and bull trout must pass through the Ship Canal during migrations to and from saltwater. The significant differences in water temperature and salinity encountered at the Hiram Chittenden Locks requires a rapid transition by the fish and may cause severe stress. For example, recorded delays in egg development in returning adult salmon may be connected to the temperature transition when entering freshwater and prolonged exposure to high temperatures in the Ship Canal. The effects upon developing eggs when fish are stressed are unknown.

Introduced exotic plants also can adversely affect habitat conditions. Dense non-native milfoil concentrations in shallow Lake Washington Bays such as Union Bay, Meydenbauer Bay, and Juanita Bay can, under certain conditions, decrease oxygen available to fish, forcing juvenile chinook away from shallow water into less suitable habitats.

Measures to Minimize Impacts to Chinook and Bull Trout

To contribute to the recovery of the species and to speed application review, permit applicants should avoid, minimize, and reduce impacts to protected species. Although we can not return to the natural conditions of 150 years ago, conservation measures can be utilized to reduce impacts to threatened fish species in the Lake Washington ecosystem. Impact reduction measures taken for specific projects should be chosen based on maintaining and enhancing the functional levels of nearshore salmonid habitat at the project site.

A primary goal of project designs should be to provide refuge and suitable rearing habitat for juvenile fish. Shallow water habitat can be improved for chinook by the addition of small substrate gravel (less than 2-inches in diameter), the establishment of complex and diverse native vegetation in and overhanging the water and/or some woody habitat features (see Table 1). Available scientific information indicates that the shading and in-water structure created by piers provides habitat and attracts predators that prey on juvenile salmon. The ESA requires that these adverse effects be avoided or minimized. Predator proximity, behavior and abundance should be considered in design proposals. While effective separation between predator and prey may not always be possible, the project design should always consider temporal and spatial potential for predator (native and non-native) interaction with juvenile chinook and should include design features to avoid or reduce these biotic interactions. For example, any complex woody debris should be located in water less than 4-feet deep (summer water level) where predators are least likely to occur.

Proposed projects will be evaluated based on a combination of site specific conditions, the effects of the project, and measures proposed to reduce impacts and improve habitat. For a given project, measures should be chosen to reduce the potential impacts of shoreline pier and bulkhead structures and to provide a diverse shallow water and riparian environment to benefit aquatic species.

The following table represents measures intended to reduce adverse impacts of shoreline development and to improve conditions for chinook, bull trout, and other aquatic species.

Table 1

Type of Activity	Impact Reduction and Enhancement Recommendations
Shoreline Stabilization	Relocate bulkhead landward of ordinary high water
	Construct beach area along shoreline to replace all or a portion of bulkhead
	Slope the bulkhead landward as shallow as possible and plant with willow
	Plant a buffer (recommended width and height of at least 10 feet) of native vegetation (i.e. willows, alder, cedar, Douglas fir) along all or part of the shoreline. Include plants that overhang the water such as willows*
	Plant native, emergent, aquatic vegetation (i.e. bulrush) along the shoreline*
	Use a combination of plants/wood to stabilize the shoreline
Boat Moorage Structures (i.e. piers and docks)	Use a mooring buoy or float instead of a pier
	Construct a pier that can be removed during part of the year
	Construct joint-use moorage structures
	Design and locate pier platforms to avoid or reduce shallow water (less than 9 feet deep) shading
	Make pier as narrow as possible (walkways and finger piers no wider than 4 feet and no part of the pierhead wider than 6 feet)
	Use a narrow, elevated walkway to access end of pier in deeper water
	Eliminate skirting
	Minimize number and size of piling-maximize distance between piling
	Use vibratory pile drivers rather than conventional hammer pile drivers
	Allow light to pass through pier (i.e. use prisms or grating)
	Remove abandoned piling and other man-made structures/debris
	Use durable and non-toxic materials (no creosote)
	Plant a buffer (recommended width and height of at least 10 feet) of native vegetation (i.e. willows, alder, cedar, Douglas fir) along all or part of the shoreline. Include plants that overhang the water such as willows*
	Plant native, emergent vegetation (i.e. bulrush) along the shoreline*
General	Plant native vegetation overhanging the water, particularly willows
	Comply with work windows that protect chinook and bull trout
	Add substrate gravel less than 2-inches in size in the nearshore
	Avoid use of pesticides/herbicides and use of chemical fertilizers on lawns and gardens
	Construct a vegetated berm or swale adjacent and parallel to the shoreline plantings to infiltrate surface water runoff from lawns and reduce contaminant input to the water
	Remove milfoil or other non-native invasive vegetation (mechanical means or by hand only)
	Develop and implement practices to minimize short-term habitat disturbance during construction

* The configuration and quantity of plantings should be based on the degree of impacts of the proposed shoreline development and the limitations or opportunities of the project site. Monitoring will be required of all planting proposals to ensure that they succeed as designed.

Project proponents who implement as many of the impact reduction and enhancement recommendations as possible are more likely to receive a "not likely to adversely affect" determination and complete the ESA consultation process and the Corps' permit process faster.

Chinook Salmon and Bull Trout Work Windows for the Lake Washington System

Current information suggests that the work windows in the following table will help protect chinook salmon and bull trout from potential effects of construction activities.[**] There are additional work window restrictions for bald eagles (see Tables 3 and 4) and sockeye spawning areas.

Table 2

Specific Area	Work Window (when work is allowed)
Lake Washington Ship Canal (from the Chittenden Locks to the east end of the Mountlake Cut)	October 1 -April 15
Lake Washington	
--South of I-90	
----within 1 mile of Mercer Slough or Cedar River	July 16-July 31 ***and*** November 16-December 31
----further than 1 mile from Mercer Slough or Cedar River	July 16-December 31
--Between I-90 & SR 520	July 16-April 30
--North of SR 520	
----Between SR 520 & a line drawn due west from Arrowhead Point	July 16-March 15
----North of a line drawn due west from Arrowhead Point	July 16-July 31 ***and*** November 16- February 1
Sammamish River	July 16-July 31 ***and*** November 16-February 1
Lake Sammamish	
--further than 1/2 mile from Issaquah Creek	July 16-December 31
--within 1/2 mile of Issaquah Creek	July 16-July 31 ***and*** November 16-December 31

[**] Adherence to these timing windows is necessary, in most cases, to maintain a not likely to adversely affect (NLAA) determination if all other measures have reduced the project impacts to this level.

Monitoring Requirements

In Lake Washington, as well as other waters, measures proposed to decrease impacts on listed species must be monitored to ensure they are successfully implemented. A monitoring plan is typically required and must include goals and objectives based on targeted habitat function, performance standards, reporting requirements including as-built drawings and photos, and contingency measures. The monitoring plan should be included in the biological evaluation/biological assessment (BE/BA).

Typical monitoring requirements for the planting of native vegetation include:

- Submittal of annual monitoring reports with photos for at least 5 years after the Corps' acceptance of the as-built drawings.
- 100% survival of all plantings at the end of the first year (replanting if necessary).
- 80% survival of all planted species or 80% coverage of targeted plant species at the end of five years (including both planted and natural recruitment).
- Control of invasive non-native plant species.
- Long-term protection of targeted native vegetation plantings.

For the most recent guidance, see Corps website www.nws.usace.army.mil/reg/reg.htm or contact the Corps project manager.

Status of the Bald Eagle in the Lake Washington System

The bald eagle was federally listed as threatened in 1978. It is widespread in Washington. The bald eagle is known to winter and nest in the Lake Washington system. They can be found throughout the year foraging around Lake Washington, Lake Sammamish, Lake Union, and the Sammamish River.

Habitat Conditions for the Bald Eagle

Habitat removal and noise may affect nesting, roosting, and foraging bald eagles. Nesting activity begins in early January with nest building or reconstruction. It concludes in mid-August when the young leave the nest. During the winter months, from the beginning of November through March, bald eagles frequent sites for feeding, resting and roosting. The birds are particularly vulnerable during these time periods.

Measures to Minimize Impacts to the Bald Eagle

To minimize impacts to bald eagles, the following measures have been developed and should be implemented, as appropriate. These measures apply to Lake Washington, Lake Sammamish, Lake Union, and the Sammamish River, only. Additional measures may apply at other locations within Washington.

1. Activities that do not alter suitable nesting, perching, or roosting habitat, and that are conducted within the August 16 to October 30 window (to avoid the bald eagle nesting and wintering seasons) generally would not affect bald eagles. Applying these measures would eliminate the need to consult on bald eagles for the proposed project.

2. If work is proposed during the nesting season, the following measures must be incorporated to minimize impacts to bald eagles:

TABLE 3

Distance of Nest to Project	**Minimization Measure**
Nest is less than 1/4 mile from project and in line of sight of the project	No work from January 1 through August 15
Nest is less than 1/4 mile from project but is not in line of sight of the project	No activities exceeding ambient noise levels, including pile driving, from January 1 through August 15
Nest between 1/4 and ½ mile from project.	No restrictions on construction activities, except pile driving. No pile driving from January 1 through August 15
Nest between ½ mile and 1 mile from project	No restrictions on construction activities, except pile driving. Vibratory pile driver must be used from January 1 through August 15.

3. If work is proposed during the winter season in areas used by bald eagles for roosting, perching, or feeding, the following measures must be incorporated to minimize impacts to bald eagles:

TABLE 4

Distance of Roosting, Perching or Feeding Habitat to Project	**Minimization Measure**
Roosting, perching, or feeding habitat within 1/4 mile of proposed project.	No work from October 31 through March 31.
Roosting, perching, or feeding habitat between 1/4 mile and 1 mile of proposed project.	No restrictions on construction, except pile driving. Vibratory pile driver must be used from October 31 through March 31.

Effect Determination Guidance

When threatened or endangered species occur in the vicinity of a proposed project that requires a Department of the Army permit from the Corps, the Corps must determine if the proposed work may affect those species or their critical habitat. For projects with absolutely no effect on listed species or their habitat, consultation with the Services is not required before the Corps makes their permit decision.

If the Corps determines that the work may affect (including beneficially affect) the listed species or their critical habitat, they must consult with the Services as specified by Section 7 of the ESA. Projects with insignificant or discountable chances of adversely affecting ("not likely to adversely affect" (NLAA)) listed species will be evaluated via the informal consultation process. Projects with greater impacts to listed species or their critical habitat ("likely to adversely affect" (LAA)) require formal consultation. In general, informal consultations take less time and effort than formal consultations. For more details about the consultation process and ESA, in general, see the Corps website www.nws.usace.army.mil/reg/reg.htm or contact Ms. Cindy Barger at telephone (206) 764-5526.

For most proposed shoreline stabilization and overwater structures, both structural and habitat improvement impact reduction measures will usually be necessary to minimize impacts such that the overall project will result in a NLAA determination for chinook salmon, bull trout, and bald eagles. Project proponents can help expedite their permit application by incorporating all possible impact reduction measures to get their project into the NLAA category.

Projects that would cause reduction in the area or function of shallow water habitat (such as new bulkheads or where there is a substantial increase in the number of piling or shading in water shallower than 9 feet) would fall within the LAA category and require formal consultation for chinook and possibly bull trout. In many cases, project proponents can help avoid the formal consultation process if they incorporate the recommended impact reduction measures into their projects. For those projects that do not include impact reduction measures, the Services may require implementation of some or all of the available recommended measures as terms and conditions of their biological opinion issued at the conclusion of the formal consultation process.

Agency Responsibilities

The Corps is responsible for:

- Receiving applications from applicants/agents
- Reviewing the application for completeness
- Determining if the project affects listed species
- Providing technical assistance and negotiating with applicants to reduce effects to listed species or critical habitat
- Determining level of effect of proposal to listed species
- Requesting consultation with the Services if project affects listed species
- Initiation of EFH consultation under Magnuson Stevens Act
- Permit issuance/denial and compliance

The Services are responsible for:

- Receiving requests for consultation and BE/BA packages from the Corps
- Reviewing the BE/BA package for completeness and consulting with the Corps
- Contacting the Corps with requests for additional information, if necessary
- Concurring or not concurring with the Corps' determination of effect
- Determining if project effects would jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat
- Issuing one of the following: (a) a concurrence letter (for NLAA); (b) a Biological Opinion with reasonable and prudent measures and terms and conditions (for LAA); or (c) a jeopardy/adverse modification Biological Opinion with reasonable and prudent alternatives, if the proposed project results in jeopardy to the listed species or adverse modification of critical habitat
- NMFS is also responsible for providing conservation recommendations for EFH

This public notice will be updated as new information becomes available. For further information about projects or the permit process, please contact Mr. Jim Green at the Corps, telephone (206) 764-6906. For additional information about the species or their habitat, please contact Ms. Kitty Nelson at the NMFS, telephone (206) 526-4643 (for chinook salmon information) or Ms. Nancy Brennan-Dubbs at the FWS, telephone (360) 753-5385 (for bull trout and bald eagle information).

This Special Public Notice can also be found at the following Corps web site: www.nws.usace.army.mil/reg/reg.htm